COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO THE
SECOND SET OF INFORMATION REQUESTS FROM USWA, AFL-CIO/CLC
D. T. E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant

USWA-2-2: Provide the date(s) that "walk-in" customer service departments/offices closed in Brockton, Lawrence, and Springfield Massachusetts, as well as any walk-in services in Maine and New Hampshire. For the year before each walk-in location closed, provide the number customers each walk-in office handled. Further, for each location, state how many employees were assigned to the walk-in customer service department/office during the year preceding its elimination. Finally, provide all documents relating to and regarding the decision to eliminate the walk-in service and all documents demonstrating how call volume at the Company's call centers was affected by the elimination of the walk-in service.

Response: Walk-in offices in Brockton, Springfield, Lawrence operation centers, as well as our Portland, Maine and Portsmouth, New Hampshire operation centers closed on June 1, 2001.

The numbers of customer contacts at each walk-in center for calendar year 2000 are:

Portsmouth	475
Portland	1137
Lawrence	17922
Brockton	4375
Springfield	10361

The number of employees assigned to handled walk-in customers during the year prior to its elimination was as follows:

	Walk-in CSR's	Cashiers
Portsmouth	0.0	0.75
Portland	1.75	0.5
Lawrence	4.0	0.5
Brockton	3.0	1.0
Springfield	3.0	1.0

Attachment USWA-02-02 (a) contains documents related to the closing of the Company's walk-in centers. Attachment USWA-02-02 (b) is a letter from the Company to the Director of the Department's Consumer Division explaining the decision to close the walk-in centers.

The Company was unable to locate any specific analysis regarding how the closing of the walk-in centers might impact call volume.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO THE
SECOND SET OF INFORMATION REQUESTS FROM USWA, AFL-CIO/CLC
D. T. E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

USWA-2-6: Identify all full time and part time employees who have left the Call Center since November 1999. For each, provide the date of their separation from employment and the reasons therefor.

Response: Attachment USWA-02-06 is a list of full time and part time employees that have left the call center due to resignations, terminations, and layoff.

Bay State Gas Company
DTE 05-27
Attachment USWA-02-06

FULL TIME AND PART TIME EMPLOYEES THAT HAVE LEFT THE CALL CENTER DUE TO RESIGNATIONS, TERMINATIONS, AND LAYOFF 1999-2005

Emp ID	Date	Reason for Separation		Emp ID	Date	Reason for Separation
3685	1999-11-15	Resigned		4044	2002-02-27	Resigned
4007	1999-11-17	Resigned		3613	2002-03-01	Resigned
4006	2000-01-19	Termination		4088	2002-03-23	Resigned
4027	2000-02-11	Resigned		3730	2002-04-15	Resigned
1952	2000-03-25	Resigned		1568	2002-06-04	Resigned
4049	2000-05-09	Resigned		3952	2002-07-27	Resigned
4048	2000-07-06	Resigned		3940	2002-08-17	Resigned
4045	2000-08-12	Termination		3775	2002-09-14	Resigned
4004	2000-08-18	Resigned		991	2002-12-17	Termination
2315	2000-10-02	Resigned		4115	2002-12-18	Resigned
3687	2000-10-02	Resigned		4023	2002-12-20	Lay off
4075	2000-10-02	Resigned		649	2003-03-01	Lay off
2441	2000-11-07	Resigned		1156	2003-03-25	Resigned
4054	2001-01-17	Resigned		1159	2003-04-26	Termination
3953	2001-02-26	Termination		1192	2003-06-12	Termination
4085	2001-04-13	Resigned		1189	2003-08-06	Termination
4028	2001-04-23	Resigned		1193	2003-08-06	Termination
4024	2001-05-31	Resigned		1239	2003-08-22	Termination
3678	2001-06-06	Lay off		4216	2003-08-26	Resigned
4074	2001-08-20	Resigned		1243	2003-10-23	Termination
3617	2001-09-06	Resigned		1247	2003-11-25	Termination
3729	2001-10-25	Termination		1188	2003-12-15	Termination
4068	2001-10-31	Resigned		1155	2004-01-20	Termination
4220	2001-11-21	Resigned		3684	2004-01-31	Resigned
1825	2002-02-14	Termination		4073	2004-11-18	Resigned
2072	2002-02-14	Termination		1190	2004-11-30	Resigned
1887	2002-02-27	Resigned		3661	2005-02-01	Termination
3679	2002-02-27	Resigned		4072	2005-03-04	Termination
3929	2002-02-27	Resigned		1157	2005-03-09	Termination

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO THE
SECOND SET OF INFORMATION REQUESTS FROM USWA, AFL-CIO/CLC
D. T. E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

USWA-2-17: For 1999 to date, provide the total number of residential, commercial, and industrial customers, respectively. Provide annual totals for each category of customer.

Response: Please see the response to UWUA-1-31.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO THE
FIRST SET OF INFORMATION REQUESTS FROM UWUA LOCAL 273
D. T. E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

UWUA-1-31 Please provide separate customer counts for (i) residential and (ii) non-residential customers, for each year 1998 to present.

Response: Please refer to Table UWUA-1-31 for the requested information.

Table UWUA-1-31

Bay State Gas Company
Residential and Commercial / Industrial Customers*
1998 - 2004

Date	Residential	Commercial & Industrial
1998	226,087	20,786
1999	228,756	19,872
2000	242,574	22,321
2001	249,436	21,116
2002	257,827	22,800
2003	258,505	23,820
2004	259,980	24,635

*Information obtained from Annual Reports to the DTE, page 44:

- Number of Customers (Per Bills Rendered) as of December 31

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO THE
THIRD SET OF INFORMATION REQUESTS FROM UWUA LOCAL 273
D. T. E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

UWUA-3-43 (Cote, p. 7) To the extent possible, please quantify the "cost savings" resulting from the use of the Metscan system by comparing the total annual costs of meter reading (labor and equipment) for the 3 years prior to installation of the Metscan devices to the total costs of meter reading for the first three years after the devices were installed.

Response: As the Metscan meter reading was not installed at a point in time but, rather, over a number of years, it is impractical to conduct the proposed before-and-after analysis. Also, since it has been 15 years since Bay State began installing the Metscan system, the detailed records to conduct such an analysis are no longer available.

Attachment UWUA-3-43 is an economic analysis, dated October 4, 1989, that was the basis for the Company's decision to move forward with the Metscan system. This analysis also compares the Metscan system to the Enscan (now Itron) radio technology.

AUTOMATED METERING SYSTEM

ECONOMIC ANALYSIS

RECOMMENDATION

PREPARED BY: JUDY COUGHLIN

OCTOBER 4, 1989

OFFICE MEMORANDUM

DATE: October 4, 1989

SUBJECT: AUTOMATED METERING SYSTEM ECONOMIC ANALYSIS AND RECOMMENDATION

FROM: J.M. Coughlin JMC

TO: C.G. Setian, P.W. LaShoto

Many utilities across the country are evaluating automated metering systems in an effort to increase efficiencies, reduce expenses and increase customer service. I have evaluated both the Enscan and Metscan systems on both an economic and feature basis for a full scale residential implementation at Bay State Gas (BSG) and recommend the Metscan system as the most economical system to install and maintain in addition to offering the most flexibility in meeting corporate objectives of customer satisfaction and enhancing market opportunities.

All automated metering systems utilized either a radio frequency in the 900 MHz band or telephone lines as the medium for communication. Enscan, Inc is the only vendor using radio communication at this time. There are a variety of telephone communication vendors who offer automated metering for gas utilities. The major differences between telephone based vendors center on the use of the telephone line (inbound versus outbound), cost, and the ability (or lack thereof) to store data. In an inbound system the unit in the field calls into a central computer located at the utilities office using a customer's existing phone line. In an outbound system, the utility initiates a call to the customer's site. The outbound system requires the utility to keep track of all customer phone numbers in addition to working with the phone company to have access to customer lines without causing their phones to ring. Bay State has chosen an inbound system for its large volume customer metering. I have chosen to evaluate Metscan, Inc. as the alternative to a radio based system for the following reasons:

1. It is an inbound system.

2. It is the only telephone system which currently has the ability to store data. Some vendors plan on adding this feature to their systems in the next 12-24 months. Their current systems give only instantaneous meter reads.

3. BSG has already invested in the software and computer facilities necessary to support this system.

An economic feasibility study was performed for both the Enscan and Metscan system for a full scale residential installation in the BSG service territory over a 7 year period. Installation of the automated metering system (AMR) was done in conjunction with the company's current Periodic Testing (PT) program. Under this program the utility must changeout a customer's meter every seven years. By taking advantage of the fact the BSG is already in the customer's house, the incremental costs of a remote metering system are limited to those costs associated with purchasing the device, installing the device on the meter and initiating a communication link between the customer and the utility. All customer contact costs and transportation to the site are borne by the PT program.

The Enscan installation over a 7 year period generates an 11.9% internal rate of return (ROR) over a 20 year period. Over a 15 year period the ROR is 7.7%. Positive cumulative cash flow does not occur until year 12. By going to a 7 year installation program, BSG must purchase a long-life battery. The cost of the battery is $10 versus $6 for Enscan's standard battery. Enscan's unit cost structure is based upon annual purchase volumes. A seven year installation of 32,000 per year costs BSG an addition $10 per unit over a 6 year installation of 40,000 unit per year. Assuming BSG could negotiate the 6 year unit price and the $6 battery cost for a seven year installation, the ROR for a 20 year period increases to 14.7%. The fifteen year ROR increases to 11.1%, with cumulative cash flow turning positive in year 11. The corporate hurdle rate is 12.86%. Increment changes of $50,000 in estimated annual savings or annual expenses affects the ROR by .7%. (See Table 1)

The Metscan installation over a 7 year period generates an internal ROR of 19.8% over a 20 year period and 17.0% over a 15 year period. Positive cumulative cash flow occurs in year 9. Increment changes of $50,000 in estimated annual savings or annual expenses affects the ROR by .7%. (See Table 1)

Two important points must be stressed when evaluating the Metscan return and cash flow results. The analysis was put together to enable BSG to compare Enscan and Metscan on an equal playing field. The only way to implement the Enscan system is to saturate an entire geographic area. Otherwise the utility cannot achieve its projected savings. In addition, since the Enscan system cannot address many commercial customers, the costs per commercial read will go up. This is because a meter reader will have to cover a more spread out territory in order to obtain just commercial reads. On the other hand, a Metscan system is not restricted to geographical installation nor is it limited to residential customers. This analysis does not represent the most

efficient way to install a Metscan system, but rather the least efficient way. This analysis does evaluate installing a Metscan system under Enscan constraints. A conscientious approach to installing Metscan remote metering on high cost-to-read customers first would improve cash flow and payback figures.

In addition to generating higher returns and faster payback periods, the Metscan offers feature advantages that the Enscan system cannot offer.

1. The Metscan system offers residential, commercial, industrial and RF link capabilities that enables a single investment in a full solution technology. BSG would avoid double startup and operating costs as well as incremental expenses associated with a multi-vendor environment. The Enscan system can only address residential and limited commercial applications.

2. In the long run the Metscan system will require labor, vehicle, and vehicle maintenance costs to troubleshoot the system. These are cost categories that are rising every year. The Enscan system requires van acquisitions for operation of their system as well as meter readers for commercial customers. In addition labor, vehicle and vehicle maintenace costs will be incurred to troublshoot the system. The Enscan system requires more reliance on cost categories that have historically increased every year.

3. Both systems offer benefits in meter reading, customer information services, credit and collection, bad debts, gas theft and data processing. Because of its ability to store and transmit customer data easily and cost effectively, the Metscan product offers these additional benefits:

a. Load Study Analysis
b. Rate Design, Case Support
c. Un-Billed Revenue Analysis
d. Loss and Unaccounted for Measurement
e. Weather and Conservation Studies
f. Flex-date Billing
g. Commercial, Industrial, Interruptible monitoring
h. Transporation Support
i. Non-registering Meter Detection
j. Marketing Program Support

In summary the Metscan system offers a more cost-effective solution to many issues facing BSG than does the Enscan system. If you have any questions, please feel free to contact me.

OBJECTIVE

- TO EVALUATE THE ECONOMIC FEASIBILITY OF AUTOMATED METER READING FOR BAY STATE GAS RESIDENTIAL CUSTOMERS

BASIC TYPES OF AUTOMATED METER READING SYSTEMS

- RADIO (ENSCAN)
- TELEPHONE (METSCAN)

ENSCAN ANALYSIS

ASSUMPTIONS

1. The analysis is based upon a full-scale residential installation over a 7-year time period. ERT devices would be installed in conjunction with the PT program. All costs for making appointments and gaining access to customer premises is absorbed in the PT program. An assumption is made that the PT program can be done on a geographic basis. The installation of an ERT does not change the PT process in the field.

2. The incremental ERT installation costs are limited to the time required to install and program the ERT unit in the meter shop.

3. Installation of the ERT unit requires 10 minutes additional time in the meter shop translating to 2 additional men on an annual basis, assuming 35 hours of productive time weekly, with 2 weeks vacation and 1 week of paid holidays. One additional man is designated to troubleshoot problems for the entire system.

4. The Enscan product will adapt to most residential meters (except tin case meters), and some small commercial meters (A1425 and smaller). The analysis assumes tin case meters would be changed out with no additional costs accruing to this project. (BSG's current policy is to scrap all tin case meters that need repair and retire all that are 28 years or older.) A total of 223,972 ERT units would be purchased over the next seven years with approximately 32,000 units purchased annually. ERT units out of warranty are expected to fail at an annual rate of .5% of installed base.

5. A meter reader's annual salary (including benefits) is assumed to be $38,672. Any additional personnel necessary to install and troubleshoot ERT devices or drive a van to collect meter readings is assumed to be at this same salary. Installation of ERT units is done by in-house personnel. Meter reading supervisors' salaries are assumed to be $53,650 (including benefits).

6. The corporate hurdle rate is 12.86%.

7. Inflation is assumed at 5% annually for the foreseeable future.

8. Units would be depreciated for tax purposes over a 5 year period.

9. Battery replacement for the ERT unit would be done during the PT cycle. Enscan's extra life battery would be required at a cost of $10 each.

10. Annual lease cost for meter readers' cars is $2,825 for a five-year period. Annual gas and repair cost is $3,500 per vehicle. Meter reading supervisors do not have a leased company car.

11. Enscan system requires the use of a van for meter reading (cost assumed at $15,000) and a Data Command Unit (DCU) in each van (cost $51,398 each). Since installation would be on a PT basis in each division, 3 vans equipped with a Data Command Unit would be needed in the first year. Vans are assumed to be retired at the end of 5 years. Computer equipment is expected to last 10 years. Software costs are estimated at $50,000. Annual maintenance costs for software is $7,500 plus $6,000 for each DCU. In addition, a PC is required in each division for file maintenance and transfer to the mainframe ($5,250 each). Two Read One Installation tools are required per division to program and initialize the ERT ($1,430 each).

12. Customer information costs were assumed to be $1.00 per customer.

13. ERT unit costs are as follows:

Year 1	$59.60	Year 7	$79.87
Year 2	62.58	Year 8	83.86
Year 3	65.71	Year 9	88.06
Year 4	68.99	Year 10	92.46
Year 5	72.44	Year 11	97.08
Year 6	76.07		

14. Currently BSG employs 35 meter readers. Installation of ERT units would ultimately reduce the need for meter readers. The company would always require a meter reader to operate each van in addition to meter readers for reading commercial and large volume accounts. This analysis assumes 3 meter readers to operate the vans and 5 meter readers for reading accounts that will never have ERT units.

The following schedule is the assumed attrition rate for meter readers:

Year 1	5	Year 5	5
Year 2	3	Year 6	3
Year 3	5	Year 7	5
Year 4	4		

Total reduction of 30 meter readers.

15. The following is the assumed attrition rate for meter reading supervisors:

Year 1	0
Year 2	0
Year 3	0
Year 4	1
Year 5	3

16. No costs are directly assigned for project management.

17. Savings are assumed to commence 6 months after installation of an ERT.

18. The company is assumed to have the ability to re-route meter readers on a periodic basis.

SUMMARY OF ENSCAN RESULTS

1. 6-YEAR INSTALLATION PLAN

In order to obtain a reduced unit cost of an ERT due to increased yearly volume, a six-year installation plan was analyzed and rejected as uneconomical. Reduced unit costs were outweighed by the cost of installation and support. A rate of return of under 9% would be achieved in 20 years. A positive cumulative cash flow would not be achieved for 12 years.

2. 7-YEAR INSTALLATION PLAN

This plan would enable the company to take advantage of economies associated with the PT program. The following internal rates of return are projected:

20-year period - 11.9%

15-year period - 7.7%

Cumulative cash flow turns positive in year 12.

3. SENSITIVITY OF THE 7-YEAR ANALYSIS

Every $50,000 annual increase in expenses above the projected base level, produces a decrease of approximately .7% in the internal rate of return.

PROS AND CONS OF THE ENSCAN AUTOMATED METERING SYSTEM

BENEFITS

1. Provides accurate monthly reads thereby eliminating estimated reads.

2. Reduces customer support requirements.

3. Increases meter reading productivity.

4. Reduces reliance on customer reads either through a postcard or a phone read.

5. Provides enhanced customer satisfaction.

6. Provides monitoring of meter tampering.

7. Easy installation.

8. No third party involvement, such as the telephone company.

CONSTRAINTS

1. Cannot be installed on every meter in the service territory. Some manual meter reading or an alternate vendor must be used to supplement the Enscan system.

2. Must be installed by geographic territory in order to achieve the projected savings.

3. Does not store data.

4. The Enscan system increases the efficiency in gathering large volumes of meter reads, however, it does not eliminate the trip to the customer's geographic location for special reads or problem reads.

5. The Enscan system does not address the commercial customer base which is a higher cost to read category than the residential.

6. Although the Enscan system reduces the cost to read a residential customer, it increases the costs to read the residual commercial customer.

METSCAN ANALYSIS

ASSUMPTIONS

1. The analysis is based upon a full-scale residential installation over a 7-year time period. Installation of AMD devices would be in conjunction with the PT program. All costs for making appointments and gaining access to customer premises is absorbed in the PT program. An assumption is made that the PT program can be done on a geographic basis. The installation of an AMD does not change the PT process in the field, however, a second person is necessary to hook up the telephone connection while the meter is being changed out.

2. The incremental AMD installation costs are limited to the time required to install and program the AMD unit in the meter shop plus the costs of a second person in the field to perform the telephone hookup.

3. Installation of the AMD unit requires 10 minutes additional time in the meter shop translating to 2 additional men on an annual basis, assuming 35 hours of productive time weekly, with 2 weeks vacation and 1 week of paid holidays. Thirteen field installers are required for the telephone hookup. Three additional men are allocated to troubleshoot problems for the entire system.

4. The METSCAN product will adapt to most residential meters (except tin case meters), and some small commercial meters without instruments, and most instruments. The analysis assumes tin case meters would be changed out with no additional costs accruing to this project. (BSG's current policy is to scrap all tin case meters that need repair and retire all that are 28 years or older.) A total of 223,972 AMD units would be purchased over the next seven years with approximately 32,000 units purchased annually. AMD units out of warranty are expected to fail at an annual rate of .5% of installed base.

5. A meter reader's annual salary (including benefits) is assumed to be $38,672. Any additional personnel necessary to install and troubleshoot AMD devices is assumed to be at this same salary. Meter reading supervisors' salaries are assumed to be at $53,650 (including benefits). Installation of AMD units is assumed to be done by in-house personnel. It should be noted that the experience in the industry is that it is less expensive to use an outside contractor for the installation of the AMD than to have in-house personnel perform that function.

6. The corporate hurdle rate is 12.86%.

7. Inflation is assumed at 5% annually for the foreseeable future.

8. Units would be depreciated for tax purposes over a 5 year period.

9. Battery replacement for the AMD unit would be done during the PT cycle.

10. Annual lease cost for meter readers' cars is $2,825 for a five-year period. Annual gas and repair cost is $3,500 per vehicle. Meter reading supervisors do not have a leased company car.

11. The three men designated to troubleshoot all problems would require a leased company vehicle ($2,825 annually) plus gas and maintenance ($3,500 annually). Vehicles are assumed to be retired at the end of five years. Each installer and troubleshooter will incur an expense of $1,800 in tools (including a Toshiba T1000).

12. Bay State already owns METSCAN system software and one DEC computer. Three additional computers would be required for the system network for a total cost of $68,000. Annual maintenance costs for software is $6,600 plus $2,860 for each DEC. The AMD is programmed through the Toshiba T1000. These costs are included as part of the tool expense (see #11 above).

13. Customer information costs were assumed to be $1.00 per customer.

14. AMD unit costs (including installation materials) are as follows:

Year 1	$55.00	Year 5	$47.00
Year 2	48.00	Year 6	47.00
Year 3	47.00	Year 7	47.00
Year 4	47.00		

15. Currently BSG employs 35 meter readers. Installation of AMD units would ultimately reduce the need for meter readers. The company would always require some personnel to install new accounts and troubleshoot problems. This analysis assumes 3 troubleshooters in perpetuity and 5 meter readers for reading accounts that are not scheduled to have AMD units installed. Note that the assumption is made that the company is only interested in looking at residential meters. The residual 5 meter readers could be eliminated with a utility-wide installation program. The following schedule is the assumed attrition rate for meter readers:

Year 1	5	Year 5	5
Year 2	3	Year 6	3
Year 3	5	Year 7	5
Year 4	4		

Total reduction of 30 meter readers.

16. The following is the assumed attrition rate for meter reading supervisors:

Year 1	0
Year 2	0
Year 3	0
Year 4	1
Year 5	3

17. No costs are directly assigned for project management.

18. Savings are assumed to commence 6 months after installation of an AMD.

19. The company is assumed to have the ability to re-route meter readers on a periodic basis.

SUMMARY OF METSCAN RESULTS

1. 6-YEAR INSTALLATION PLAN

A six-year installation plan was analyzed and rejected as uneconomical.

2. 7-YEAR INSTALLATION PLAN

This plan would enable the company to take advantage of economies associated with the PT program. The following internal rates of return are projected:

20-year period - 19.1%
15-year period - 16.2%

Cumulative cash flow turns positive in year 9.

3. SENSITIVITY OF THE 7-YEAR ANALYSIS

Every $50,000 annual increase in expenses above the projected base level, produces a decrease of approximately .7% in the internal rate of return.

PROS AND CONS OF THE METSCAN AUTOMATED METERING SYSTEM

BENEFITS

1. Provides accurate monthly reads thereby eliminating estimated reads.

2. Reduces customer support requirements.

3. Reduces reliance on customer reads either through a postcard or a phone read.

4. Provides enhanced customer satisfaction.

5. Provides monitoring of meter tampering.

6. Allows customized billing schedules.

7. Full-time data collection provides the information to design rates relative to peak system load and to monitor conservation and marketing efforts.

8. Implementation can be tailored to maximize the economical benefit to the utility by prioritizing installation to customer groups that incur the highest meter reading cost.

9. The utility can address soft shut offs/turn ons without requiring a special trip to the customer's site.

10. One system can address the company's entire customer base needs.

11. High/low usage alarms detect operational problems in the system.

CONSTRAINTS

1. There may be resistance on the part of the customer to hooking up to his telephone. An informative customer education program is mandatory.

2. All information is transmitted through a third party (telephone company).

COMPARATIVE ANALYSIS

		ENSCAN	METSCAN
1.	Total Capital Investment Over 20 Years	$20,452,624	$15,215,141
2.	Internal ROR		
	20 Years	11.9%	19.1%
	15 Years	7.7%	16.2%
3.	Company Hurdle Rate	12.86	12.86
4.	Sensitivity to an annual $50,000 increase in expense or $50,000 decrease in savings		
	+/- $50,000	.7%	.7%
5.	Reduce Unit Cost Reduce Battery Cost		
	20 Years	14.7	
	15 Years	11.1	

REPLACEMENT PAGE

Bay State Gas Company
SIR Base Rate Adjustment
Eligible Additions
SAMPLE

Ln. No.	Description	Current Year Total Direct Additions 1/ (1) ($)	Four Year Avg. Pg. 3, Col. 6 (2) ($)	Eligible Additions For SIR (3)=(1-2) ($)
	Bare Steel Replacement Costs			
1	Mains	15,552,265	2,733,699	12,818,566
2	Services	3,231,844	1,083,234	2,148,610
3	Meter Installations and Other Eligible Facilities	524,311	224,311	300,000
4	Total Cost	19,308,420	4,041,244	15,267,176

NOTES:

1/ Source - Bay State Gas Company Work Order Management System ("WOMS") Total Project Cost Summary Reports.

REPLACEMENT PAGE

Bay State Gas Company
SIR Base Rate Adjustment
Historical Bare Steel Replacement Capital Expenditures
Direct Costs
2000 through 2003
ACTUAL

Ln. No.	Description	2000	2001	2002	2003	Average
	(1)	(2)	(3)	(4)	(5)	(6)
		($)	($)	($)	($)	($)
	Bare Steel Replacement Costs					
1	Mains	1,683,647	3,555,845	2,533,660	3,161,644	2,733,699
2	Services	744,544	1,324,186	1,077,621	1,186,583	1,083,234
3	Other Additions	130265	292,982	224,915	249,083	224,311
	Total Cost	2,558,456	5,173,013	3,836,196	4,597,310	4,041,244